# 4.0 PROPOSED STREETCAR SYSTEM

The following sections provide conceptual details on the operating plan, trackway, stations, vehicles, traction power substations, and maintenance and storage facility proposed for the Cincinnati Streetcar. These operating and design elements apply to both Build Alternatives 1 (Preferred Alternative) and 2.

## 4.1 Operating Plan

The streetcar service would operate seven days per week, averaging 19 hours of service per day. The hours of operation for the streetcar are as follows:

- Weekdays: 6:00 a.m. to 1:00 a.m.
  - AM Peak – 7:00 a.m. to 9:00 a.m.
  - Midday Peak – 11:00 a.m. to 2:00 p.m.
  - PM Peak – 4:00 p.m. to 7:00 p.m.
  - Off-Peak - 6:00 a.m. to 7:00 p.m.; 9:00 a.m. to 11:00 a.m., 2:00 p.m. to 4:00 p.m., 7:00 p.m. to 1:00 a.m.
  - PM Peak – 3:00 p.m. to 6:00 p.m.
- Weekends: 6:00 a.m. to 1:00 a.m.

The proposed streetcar would operate every 10 minutes in the peak periods and 15 minutes in the off-peak. During weekends, the streetcar would operate every 15 minutes.

A total cycle time between the riverfront and Henry Street is 40 minutes. This includes a 31 minute and 50 second round trip running time plus an eight minute and 10 second delay/layover allowance. With the Uptown extension, total cycle time is 50 minutes, including a layover allowance.

Service could be adjusted to reflect ridership patterns. For example, service on Friday and Saturday evenings could be extended to 2:00 a.m. to accommodate potential entertainment patrons, and Sunday services could be reduced. Additional service could also be provided to support special events (e.g., sporting events, concerts, festivals). A weekend schedule would be used on holidays.

Currently passenger fare would range from free-fare to $1.00 per trip. Discounts that are standard to public transit, such as half price fares for senior citizens and persons with disabilities, would apply. Transfer fare arrangements between the streetcar and the existing bus systems would need to be devised. In addition to cash fares, other payment methods could include passes, stored value cards and promotional fare tickets or vouchers.

## 4.2 Design Elements

### 4.2.1 Trackway

The streetcar line would include one set of at-grade tracks situated in shared travel lanes in mixed traffic. No exclusive right of way would be required. Track placement would primarily be in the middle of the traffic lane. The streetcar would generally operate in second lane from the curb (adjacent to the curb lane). Some on-street parking would need to be eliminated near stops and near intersections where the streetcar would make turns (Section 5.1.3 and Appendix C). Right of way is sufficient to accommodate turns at the corner of 12th Street and Elm Street and at Central Parkway and Walnut Street.

**Trackway in Shared Travel Lanes**

### 4.2.2 Station Stops

The optimum spacing between stops for pedestrian-oriented streetcar systems is between 800 and 1,100 feet. A two block spacing of stations is planned based on Cincinnati's Downtown street grid spacing of 475 feet. Streetcar stops are anticipated to be designed similar to the Downtown bus stops with a small shelter and a ticket vending machine.

**Example of a Station Stop**

Of the 22 proposed stops in the Central Business District (CBD) and Over-the-Rhine (OTR), 12 would require the construction of bump-outs allowing the streetcar vehicle to run in the second lane of traffic preserving on-street parking where possible (see Section 5.1 for further traffic discussion). Bumpouts are peninsulas in the street that provide a path for passengers to board and alight without requiring the streetcar to change lanes (and thus reducing potential sideswipe traffic incidents). At these bumpouts, curb heights would be raised to 10 inches along station frontages with Americans with Disabilities Act (ADA)-compliant ramps or backslopes to sidewalk areas. Stations would be uniform in design and user-friendly.

### 4.2.3 Vehicles

The streetcar system would require four streetcar vehicles to operate the peak period service and two streetcar vehicles to accommodate off-peak service between Freedom Way and Henry Street. The extension to Uptown would require one additional streetcar for peak period service and one additional streetcar for off-peak service. Two streetcars would serve as spare cars to permit repairs and cleaning without affecting service delivery and to be able to accommodate additional service needs during special events and higher than anticipated peak travel demand periods.

**Example of Streetcar Vehicle**

**Example of Streetcar Vehicle**

The streetcar vehicles would be electric rail cars approximately 66-80 feet long and approximately eight feet wide, with a capacity of 30 seated and 90 standing passengers (120 passengers total). Vehicles can operate with a maximum speed of 44 miles per hour but will travel at speeds within mixed traffic lanes with posted speed limits between 20 and 30 miles per hour. The streetcars would be articulated to allow for tight turns in urban intersections. The vehicles would have a greater passenger capacity than existing buses. This would allow for increased comfort by passengers as well as the ability to accommodate higher load factors for special events.

**Example of Streetcar Vehicle**

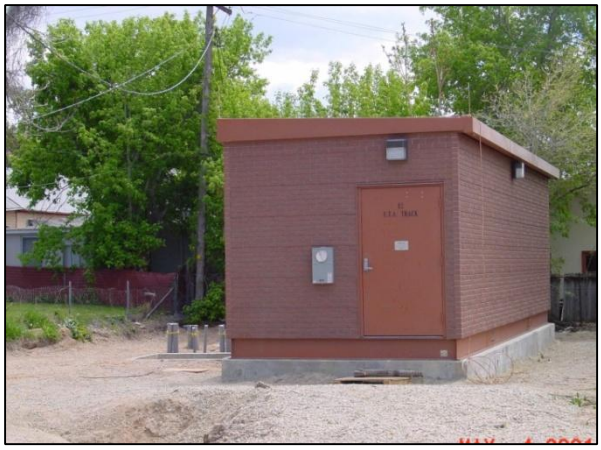
The vehicles would be low-floor and ADA compliant, allowing passengers to enter at the same height as the transit stop platform. This is an improvement over many existing transit vehicles which, while accessible, are generally not low floor and do not facilitate rapid boardings and alightings. Bicycles, wheelchairs, strollers, etc. could be rolled directly into the vehicles.

### 4.2.4 Power

Catenary and Poles

Streetcars typically receive power via a pantograph that touches an overhead wire, called catenary. Catenary poles would be installed to support the overhead wire in a two step process. The first step would be to drill 30-inch diameter holes behind the curbs that when filled with concrete and reinforcing steel would create the foundation for the catenary poles. After the foundations have been set, poles would be bolted into place and cross-arms attached to carry the catenary wire. Once the power reaches the streetcar through the pantograph, it is fed to traction motors on each wheelset. Catenary poles would be constructed adjacent to the streets within the sidewalk areas along the streetcar alignment. The catenary usually causes little visual impact. The Federal Transit Administration, the City of Cincinnati and the Ohio Historic Preservation Office will enter into a Memorandum of Agreement detailing the consultation process for the design elements and placement of the centenary poles so as to mitigate or eliminate any potential adverse impact on historic resources. Further details of visual impacts are discussed in Section 5.19.3.

Traction Power Substations



**Example of a Traction Power Substation**

The streetcar would require traction power substations to provide consistent levels of electricity to power the modern streetcar vehicles. A substation would consist of a small, one story building that contains electrical equipment that distributes electricity to the overhead wires, which powers the vehicles. The footprint dimensions of the substation building are expected to be approximately 20 feet by 40 feet. As these structures are prefabricated and placed, it is anticipated that on-site construction will be limited to placement of a concrete pad and installation of a security fence. The buildings would not be staffed but include two doors to allow technicians to observe and maintain equipment. There would be four substations located along the streetcar alignment. The electrical substations would be located at the following locations:

- Between Second Street and eastbound Fort Washington Way (I-71) just east of Main Street
- Court Street just west of Walnut Street
- Southwest corner of Findlay and Race streets
- Northwest side of Vine Street between Mulberry and St. Joe streets across from Rothenberg Preparatory School.

Three of the electrical substations would be located in areas that are currently parking lots or city property. The substation between Second Street and eastbound Fort Washington Way (I-71) just east of Main Street would be in an unused middle portion of roadway right of way. These locations are identified in the conceptual engineering plans included in Appendix C.